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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/748,827

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Joonhyung Kwon

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EXAMINER

LARKIN, DANIEL SEAN

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/748,827

Applicant(s)

KWON ET AL.

Examiner

Daniel S. Larkin

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30-34 is/are allowed.
- 6) ☐ Claim(s) 21,23,27 and 28 is/are rejected.
- 7) ☒ Claim(s) 22,24-26 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 29 December 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 29 December 2003 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed has not been provided. It has been placed in the application file, but the information referred to therein, specifically the journal articles, has not been considered as to the merits. Patent Rule 37 CFR 1.98 requires that in order to consider documents within the IDS without providing a copy when previously submitted in a prior application, applicants must properly identify the earlier application in the information disclosure statement and rely on this application for an earlier effective filing date under 35 U.S.C. 120; and the information disclosure statement submitted in the earlier application complies with paragraphs (a) through (c) of this section. In this instance, the IDS filed 29 December 2003 fails to identify that these references have being previously submitted in a prior application and identify that application in the IDS.

Applicants are advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Drawings

2. The drawings are objected to because of the following:

Reference numeral "38", as shown in Figure 5A, should be renumbered -- 38B --.

Reference element "36", i.e. the lower part, is shown above the U-shaped bracket (47) in Figure 5A and below the U-shaped bracket (47) in Figures 5C and 5D.

Are both of these arrangements correct?

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "39" has been used to designate both a "glass plate holder", as shown in Figure 2, and a "screw", as shown in Figure 5A.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Reference numeral -- 47 -- does not appear within Figure 5B, as suggested by the disclosure on page 9, line 12.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

Reference numeral "59", as shown in Figure 5A, does not appear within the written specification.

5. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The abstract of the disclosure is objected to because the current abstract is not directly to the presently claimed subject matter. The newly submitted claims are directed to a kinematic mounting structure supported by a scanner. Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities:

Page 1, line 4: The phrase --, now U.S. Patent No. 6,677,567, -- should be inserted after the date "February 15, 2002". Appropriate correction is required.

Claim Objections

8. Claims 24-29 are objected to because of the following informalities:

Re claim 24, claim line 1: The term "wherein" should be replaced with the phrase -- further comprising --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 27, claim line 4: The phrase "the magnets" lacks antecedent basis. Independent claim 21 recites "at least one magnet", but none of the claims preceding claim 27 has set forth that the "at least one magnet" was specifically more than one magnet as is the case in claim 27.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,057,546 (Braunstein et al.) in view of US 5,705,814 (Young et al.).

With respect to the limitations of claim 21, the reference to Braunstein et al. discloses a SPM head (14) comprising a scanner (20) supported by a stationary frame (14); a kinematic mounting mechanism (266) supported by the scanner, the mounting mechanism comprising three protrusions (230, 231, 232) and at least one magnet (246); and a chip mount having a plurality of holes/slots (267, 28, 269) and a flat surface. The reference to Braunstein et al. fails to disclose holding the chip mount with a magnet. The reference to Young et al. discloses a scanning probe microscope whereby a cantilever (4) is kinematically mounted to a probe mount (32). One embodiment, as shown in Figure 9D, shows the probe mount (32) comprising a pick-up magnet (94) which provides a magnetic mounting surface with a ferromagnetic material (92) mounted to the cantilever (4). Modifying the mounting structure of Braunstein et al. by removing the spring clip and replacing with magnetic mounting structure would have been obvious to one of ordinary skill in the art as a means of providing a secure mounting structure while allowing the cantilever to be easily mounted and removed from the probe mount/mounting mechanism.

With respect to the limitation of claim 23, the reference to Braunstein et al. fails to disclose the chip mount having a dimension larger than a corresponding dimension of the kinematic mounting mechanism. The reference to Young et al., as shown in Figures 9A-9D, teaches a chip mount/cantilever support (4) having a length dimension greater than a corresponding length dimension of the kinematic mounting mechanism/probe mount (32). Providing a chip mount having a greater dimension than the mounting mechanism would have been obvious to one of ordinary skill in the art as a means of providing a stable base for a cantilever while insuring that the cantilever remains unobstructed to receive light from a light source.

Allowable Subject Matter

13. The following is a statement of reasons for the indication of allowable subject matter:

Prior art was not relied upon to reject claims 22 and 24-34 because the prior art fails to teach and/or make obvious the following:

Claim 22: Providing a scanning probe microscope comprising a scanner mounted on a one dimensional translation stage, the scanner being limited to linear motion in a direction of motion of the one dimensional translation stage; and a two dimensional translation flexural stage mounted to a sample chuck, the sample chuck being movable by the flexure stage in a plane perpendicular to the direction of motion of the one dimensional translation stage in combination with all of the remaining limitations of the claim and all of the limitations of the independent claim.

Claims 24-29: Providing a scanning probe microscope comprising a signal line supported by the kinematic mounting mechanism; and at least one of the three protrusions is in electrical contact with the signal line in combination with all of the remaining limitations of the claim and all of the limitations of the independent claim.

Claims 30-34: Providing a scanning probe microscope comprising a z scanner mounted on a one dimensional translation stage, the z scanner being limited to linear motion in a direction of motion of the one dimensional translation stage; and a two dimensional translation flexural stage mounted to a sample chuck, the sample chuck being movable by the flexure stage in a plane perpendicular to the direction of motion of the one dimensional translation stage in combination with all of the remaining limitations of the claim.

The closest prior art to US 5,939,709 (Ghislain et al.) shows a xyz scanner mounted to a z translation stage attached to a stationary frame, and an x-y flexure stage for mounting a sample underneath a cantilever. The reference to Ghislain et al. fails to teach a scanner being limited to motion in a direction of motion of the one dimensional translation stage, in this case the z stage (76), or a kinematic mounting arrangement for the cantilever.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art to US 2003/0015653 (Hansma et al.) discloses an atomic force microscope having a kinematically mounted cantilever holder (72) mounted to a scanner (78) through the use of three steel bearing balls (82, 84, 86) which mate with a hole (88), a slot (90), and flat (92) located in the bottom of the cantilever holder (72), as shown in Figure 9.


The prior art to US 2002/0092340 (Prater et al.) shows a cantilever array sensor system whereby a cantilever is mounted to a support plate (2004) with ball protrusions (2010) and a magnet (2014), as shown in Figure 20.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin
AU 2856
21 October 2004



DANIEL S. LARKIN
PRIMARY EXAMINER